

CLAIMS:

1. A method of priming an in-line molten metal filtration unit having a porous ceramic or refractory filter mounted substantially horizontally in a filter box having an inlet  
5 for molten metal and an outlet for molten metal, the outlet being a closeable outlet in an exit well connecting to the downstream side of the filter,

the method comprising the steps of adding sufficient molten metal to the filter box to fully cover the upstream  
10 side of the filter with a depth of molten metal, temporarily closing the molten metal outlet in the exit well with a sealable cover, applying a steadily increasing vacuum to the closed chamber at a rate between 0.1 and 10 kPa per second by withdrawing a stream of air from the  
15 exit well through a fan or air venturi until the molten metal begins to flow through the filter and then immediately releasing the vacuum and removing the sealable cover from the molten metal outlet.

2. A method as claimed in claim 1 wherein the stream of  
20 air is withdrawn from the exit well by means of a fan.

3. A method as claimed in claim 1 wherein the stream of air is withdrawn from the exit well by means of an air venturi.

4. A method as claimed in claim 2 wherein the fan is  
25 connected to the exit well of the filter box by way of a conduit having a valve for venting to the atmosphere and the vacuum is released by opening this valve to the atmosphere.

5. A method as claimed in claim 4 wherein the conduit is  
30 connected to the sealable cover and when the vacuum is to

be released the sealable cover is removed from the exit well and molten metal outlet.

6. A method as claimed in claim 3 wherein the conduit also includes a three way valve for bleeding atmospheric  
5 air into the air stream being drawn into the fan.

7. A method as claimed in claim 6 wherein the priming is conducted within a time of about 1 to 120 seconds.

8. A method as claimed in claim 7 wherein the time is about 2 to 30 seconds.

10 9. A method as claimed in claim 7 wherein the filter has a filtration area of about 25 to 10130 square centimeters (4 to 1570 square inches).

10. A method as claimed in claim 7 wherein the filtration area is at least 645 square centimeters (100 square  
15 inches).

11. A method as claimed in claim 7 wherein the filter has a thickness of about 1.25 to 10.2 centimeters (0.5 to 4.0 inches).

12. A method as claimed in claim 11 wherein the thickness  
20 of the filter is about 2.5 to 7.6 centimeters (1 to 3 inches).

13. A method as claimed in claim 11 wherein the filter has an average pore size of about 150 to 500 microns.

14. An apparatus for filtering molten metal comprising a  
25 filter box, a feed trough for feeding molten metal into the filter box, a porous ceramic or refractory filter mounted substantially horizontally within the filter box to receive molten metal from the feed trough, an exit well beneath the filter for receiving filtered molten metal, said exit well

extending laterally beyond the filter box and beneath a bottom portion of a discharge trough, said trough bottom portion having an opening connecting the discharge trough to the exit well, a vertically movable closure unit adapted  
5 to sit over and seal the opening between the discharge trough and exit well, an air conduit connected at a first end to the closure unit and at a second end to a fan or air venturi for withdrawing air from the exit well, a valve for releasing vacuum formed in the exit well and means for  
10 raising and lowering the closure unit.

15. An apparatus as claimed in claim 14 wherein the air conduit second end is connected to the intake of a fan.

16. An apparatus as claimed in claim 15 wherein the air conduit second end includes a three-way valve for bleeding  
15 atmospheric air into the air in the conduit being withdrawn from the exit well.

17. An apparatus as claimed in claim 15 wherein the fan is adapted to apply a steadily increasing vacuum to the closed chamber at a rate between 0.1 and 10 kPa per second.

20 18. An apparatus as claimed in claim 15 wherein the vacuum-releasing valve is connected to the vertically movable closure unit.

19. An apparatus as claimed in claim 18 wherein the vertically movable closure unit includes electrical  
25 contacts extending from the bottom thereof for detecting the presence of molten metal.

20. An apparatus as claimed in claim 14 wherein the filter box includes a removable cover.

21. An apparatus as claimed in claim 14 wherein the filter has a filtration area of about 25 to 10130 square centimeters (4 to 1570 square inches).
22. An apparatus as claimed in claim 14 wherein the  
5 filtration area is at least 645 square centimeters (100 square inches).
23. An apparatus as claimed in claim 14 wherein the filter has a thickness of about 1.25 to 10.2 centimeters (0.5 to 4.0 inches).
- 10 24. An apparatus as claimed in claim 14 wherein the thickness of the filter is about 2.5 to 7.6 centimeters (1 to 3 inches).
25. An apparatus as claimed in claim 14 wherein the filter has an average pore size of about 150 to 500 microns.